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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/718,666

11/24/2003

Ming-Cheng Chang

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1606

23364

7590

10/02/2006

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EXAMINER

ARENA, ANDREW OWENS

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/718,666	Applicant(s) CHANG, MING-CHENG	
	Examiner Andrew O. Arena	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/11/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4 and 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/11/2006 has been entered.

Drawings

Fig 1 is objected to because it is unclear what the ovals overlapping elements 15 represent. It seems ovals are used for "a conventional deep trench" (pg 2 ln 18), but the "deep trench in accordance with the present invention" seems to be depicted as a shaded rectangle (15; pg 2 ln 20). The ovals should be described in the specification and labeled in the drawing, or removed from the drawing.

Fig 2 is objected to because it omits labels for the following:

- dotted regions just below and between each "WL";
- horizontal shaded bars directly underlying "WL"s of area 13';
- vertical shaded bars on either side in the upper portion of trenches 15; and
- long horizontal bars under said vertical shaded bars, outside trenches 15.

Said elements should be described and labeled, or removed from the drawing.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "12" (pg 2 ln 16) and "WL" (pg 2 ln 25) have both been used to designate the word line. This objection is based on the assumption that, in accordance with convention, the gate serves as the word line (see corresponding objection to specification below).

Fig 2 is objected to because the active areas (pg 2 ln 17-18) appear to be mislabeled. A person having ordinary skill in the art would think that the dotted regions were the active areas, such areas conventionally being formed in the substrate below the word lines. The structures currently labeled 13'', 13', 13 are intricate structures that would not be recognized as active regions (see objection to specification). Additionally, the central portion of 13' in Fig 1 completely underlies two gates 12 (WL in Fig 2?) and the outer portions of 13' each partially underlie one gate 12; this is consistent with the central dotted region of Fig 2 underlying WLs, but not consistent with 13' in Fig 2.

Fig 2 is objected to because the active regions are not consistent with those depicted in Fig 1. There are no structures in Fig 2 that correspond to 13'' & 13 of Fig 1 in being significantly wider than, and underlying only a single one of, their respective gates 12 (WL in Fig 2?). 13'' and 13 as labeled in Fig 2 traverse two WLs. The dotted regions in Fig 2 do not underlie, nor are they significantly wider than, any WLs.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. See MPEP § 608.02(p).

Specification

The specification is objected to because it omits a discussion of those above identified elements of Fig 2 for which labels have been omitted.

The specification is objected to because one of ordinary skill in the art would appreciate that gates typically serve as word lines, which is contradicted by their separate labeling in Figs 1 and 2; whether or not that convention holds in the present application should be explicitly stated in the specification.

The specification is objected to because structures 13'', 13', 13 in Fig 2 are not described in the specification. It does not seem that said structures actually correspond to the active areas (the dotted regions?); if they do, then a sufficient description of the unconventional location and geometry must be provided, if they do not, then a sufficient description of what they are and their geometry must be provided.

Claim Objections

Claim 1 is objected to under 37 CFR 1.75(i) as being in improper form because the claim sets for a plurality of elements which are not separated by a line indentation.

Claim 2 is objected to because the recitation "two adjacent two" (ln 6) seems a misprint. For rejection purposes, said recitation is interpreted as "the adjacent two".

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action (dated 01/11/2006).

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Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Wada (US 6,198,151).

RE claim 1, Wada discloses (Fig 2) a deep trench structure of semiconductor device (col 5 ln 5),

said semiconductor device having a plurality of active areas (111-113),

said deep trench structure having a deep trench (202) communicating with only two different active areas (111 & 112) which are respectively connected to two adjacent bit lines (BL1 & BL1'), so as to measure a leakage current between said two different active areas.

RE claim 2, Wada discloses (Fig 2) the cross section of said deep trench (202) communicates with said two different active areas (111 & 112).

RE claim 4, Wada discloses (Fig 2) a semiconductor memory device (col 5 ln 4) comprising:

a plurality of bit lines (BL1, BL1');

a plurality of gates (WL1, WL2) intersecting with said bit lines (Fig 1);

a plurality of active areas (111, 112) each of which is connected (114, 115) to one of said bit lines (col 6 ln 47-51);

a plurality of deep trenches (202, 203), at least one of which (202) communicates with only two different active areas (111, 112) which are respectively connected with [the] adjacent two of said bit lines (BL1, BL1'), so as to measure a leakage current between said two different active areas.

RE claim 5, Wada discloses (Fig 2) the cross section of said deep trench (2020) communicates with said two different active areas (111 & 112).

Response to Arguments

Applicant's arguments filed 07/11/2006 have been fully considered but they are not persuasive.

Applicant's argument that "the Wada patent fails to disclose or suggest...for measuring leakage current between the two different active areas" does not structurally distinguish the claims from the applied reference. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See MPEP § 2114.

Applicant's mere allegation that "use of the trench for a purpose other than to contain the memory cell capacitor would render the device of Wada inoperative" is neither supported by evidence nor elaborated so as to be convincing that Wada is incapable of another purpose.

Examiner also notes that applicant's specification, even when taken with the drawings, does not contain enough detail to distinguish the "deep trench" of the invention from the "deep trench capacitor" of Wada, or from any convention deep trench DRAM structure. It seems impossible, especially given their identical structures, that applicant's claimed invention can be used for a purpose that Wada is incapable of.

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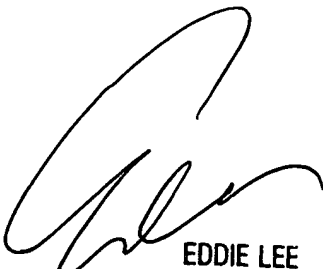
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew O. Arena whose telephone number is (571) 272-5976. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrew O Arena
19 September 2006



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